REMARKS

STATUS OF THE CLAIMS

Claims 1-40 and 43-51 were pending. Claim 1 has been amended as shown above to indicate that the polynucleotide sequence encoding the *Pol* polypeptide consists essentially of the full length sequences of SEQ ID NOs:30, 31 and 32.

Because the amendments simply clarify the claims and do not add new matter or necessitate a new search, entry thereof after final is requested such that claims 1-40 and 43-51 as shown above are pending.

REJECTIONS WITHDRAWN

The rejection under 35 U.S.C. § 112, 1st paragraph for alleged lack of enablement was not reiterated and therefore is considered withdrawn.

35 U.S.C. § 112, 1ST PARAGRAPH, WRITTEN DESCRIPTION

Claims 1-40 and 43-47 remain rejected as allegedly not described by the specification as filed. (Final Office Action, pages 4-10). The rejection is premised on the alleged lack of description of "which structural elements of the claimed sequences are critical for conferring the required effect to the sequence ... without performing additional experimentation." *Id.* at page 8.

Scope of the claims

The Office continues to assert that the claims encompass more than "3,662,186,256 different sequences." (Final Office Action, page 5). However, claim 1 requires that the sequences must exhibit 90% identity to the full-length of SEQ ID NOs:30, 31 and 32 and must encode a polypeptide that induces a *Pol*-specific immune response. In other words, all sequences falling within the scope of the claims must include the same number of codons as the reference sequence. Sequences with a single stop codon or frame shift do not fall within the scope of the claims.

Furthermore, as repeatedly noted during the lengthy prosecution of this case and detailed again herein, antigenic polypeptides do not contain a single critical epitope or antigenic domain. Rather, any given antigenic protein will include multiple epitopes (CTL, conformational, etc.)

throughout the length of the protein. Accordingly, many amino acid substitutions can be made while still retaining the claimed immunogenic function of the protein. The functional redundancy exhibited by antigenic polypeptides is distinguishable from proteins with other activities, for example, enzymatic polypeptides containing a single catalytic domain or DNA-binding polypeptides with a single DNA-binding domain.

Moreover, the Pol domains, including Pol-specific epitopes, were known at the time of filing and are also described in the specification as-filed. Table A, beginning on page 29 of the as-filed specification details the organization of the HIV genome, including various domains of Pol. Table B (page 35 of the as-filed specification) details various domains of the recited reference sequences. Thus, it is clear that the skilled artisan would recognize from the as-filed specification that Applicants were in possession of the claimed molecules.

Additional experimentation is not relevant to written description inquiry

With regard to the rejection itself, Applicants note that the assertion regarding "additional experimentation" is entirely irrelevant to a written description inquiry. The need for additional experimentation to practice the claimed invention is relevant only to enablement, which is a separate requirement from written description. See, e.g., *In re DiLeone*, 168 USPQ 592 (CCPA 1971). In the instant case, the enablement rejection has been twice withdrawn (including in the Final Office Action at issue) and, accordingly, the Office has acknowledged that undue experimentation is not required to make or use the claimed expression cassettes.

Description of "critical" epitope-encoding sequences is not required to show possession

With regard to the rejection as set forth in the Final Office Action, the Examiner's assertion that literal description of "critical" structural elements are required is legally and factually untenable.

There is no *per se* requirement under 35 U.S.C. § 112, first paragraph that so-called "critical" regions within a larger sequence be identified. Instead, each application must be judged on the particular fact pattern (disclosure, state of the art, etc.) with the underlying assumption that the specification as filed is presumed to satisfy the written description requirement. *See, e.g., In re Wertheim,* 541 F.2d 257, 265, 191 USPQ 90, 98 (CCPA 1976).

Indeed, as noted repeatedly in the record, the cases cited by the Examiner on pages 6-7 of Final Office Action (*Eli Lilly* and *Fiers*) involved disclosures which failed to disclose even one specific sequence with the claimed function – human insulin in *Eli Lilly* and any human DNA encoding fibroblast interferon-beta in *Fiers*. In both *Eli Lilly* and *Fiers*, the specifications at issue disclosed only a method for isolating the claimed sequences yet the claims were drawn to the genera of all insulin- or IFNβ-encoding sequences. This is completely different than the instant case where the complete sequences of 3 representative polynucleotides are disclosed and where the claims are drawn to sequences having 90% identity to the one of the 3 disclosed sequences and encoding a polypeptide that elicits a *Pol*-specific immune response.

Thus, the adequacy of written description is determined by what is actually disclosed in the specification in view of what was known in the art. Indeed, the standard being applied in Applicants' case disregards the axiom that an applicant need not describe and preferably omits that which is not new, including, in the pending case, the fact that any given polypeptide includes multiple epitopes and that this redundancy allows any given protein to generate a specific immune response when one or more of the epitopes are altered.

As set forth recently in *Capon v. Eshhar* 76 USPQ2d 1078 (Fed. Cir. 2005), the Federal Circuit completely rejects the notion that the specification must describe information (*e.g.*, sequence data) that is either known or can readily be determined based on scientific facts (*Capon* at page 1085, emphasis added):

> The "written description" requirement must be applied in the context of the particular invention and the state of the knowledge. The Board's rule that the nucleotide sequences of the chimeric genes must be fully presented, although the nucleotide sequences of the component DNA are known, is an inappropriate generalization. ...
>
> The "written description" requirement states that the patentee must describe the invention; it does not state that every invention must be described in the same way. As each field evolves, the balance also evolves between what is known and what is added by each inventive contribution.

As in *Capon*, the skilled artisan would recognize that, in the instant case, Applicants were in possession of sequences encoding immunogenic Pol polypeptides as claimed. Pol-specific epitopes were well known at the time of filing, as was the fact that these epitopes could generate

a *Pol*-specific immune response. See, e.g., Sternberg et al. (1987), Ref. C122 of IDS filed December 18, 2002 and references cited on page 34, lines 6-10 of the specification. Therefore, Applicants need only describe in the as-filed specification that which is new – *i.e.,* sequences encoding synthetic *Pol* polypeptides that elicit a *Pol*-specific response.

The as-filed specification clearly satisfies the legal requirements for adequate written description, as it amply describes both that which well-known, namely structure of wild-type *Pol* proteins (see, Table A on page 29), identification of regions containing Pol-specific epitopes (Table B on page 35) and correlation between this structure and function, and also amply describes that which is new (*i.e.,* 3 representative sequences encoding synthetic Pol polypeptides that elicit Pol-specific immune responses).

Thus, the allegation made on page 5 of the Final Office Action that "one of skill in the art would not be able to envisage which variants of SEQ ID NOs: 30-32 which meet the structural limitations of the claims ... would have the desired effect" is without basis in fact.

The specification clearly describes how the skilled artisan can use any sequence having 90% identity to the full-length of SEQ ID NOs:30-32 and which encodes a protein that elicits a Pol-specific immune response. *See, e.g.,* Table B, parsing the regions of each reference sequence. Once sequences with 90% identity to the full-length of SEQ ID NOs:30-32 are identified, the specification, in light of the art available at the time of filing, clearly describes how to determine (by testing, epitope mapping, etc.) whether protein encoded by that sequence would elicit an immune response to Pol. Simply put, there are **no** features of the claimed molecules that are not completely described in the as-filed specification. Indeed, the flexibility and wide applicability of the invention, in providing synthetic Pol-encoding sequences capable of generating an immune response as claimed, actually precludes providing the types of sequence lists demanded by the Examiner.

Thus, the disclosure of the specification as filed more than satisfies the written description requirement with the respect to the pending claims; and the notion that the specification provides 3 representative examples along with more than sufficient information in order for a person of skill in the art to construct functional products exhibiting 90% identity to the literally described sequences, but somehow fails to describe that product is completely at

odds with not only *Capon* but with every case, rule and guideline relating to the written description requirement.

In sum, the rejection under 35 U.S.C. § 112, first paragraph, written description, is without basis in law or fact and, accordingly, should be withdrawn.

DOUBLE PATENTING

Claims 1, 5-11 and 19-21 were rejected under 35 U.S.C. § 101 as claiming the same invention as that of claims 1, 16-22 and 30-34 of USSN 10/490,435 (now U.S. Patent No. 7,211,659). (Final Office Action, page 11).

The pending claims are drawn to expression cassettes comprising a polynucleotide consisting essentially of a sequence having 90% identity to SEQ ID NO:30-32. Thus, the claims are not directed to the same invention as the much longer sequence forth in SEQ ID NO:9 of the '659 patent. Accordingly, withdrawal of the statutory double patenting rejection is in order.

CONCLUSION

In view of the foregoing amendments, Applicants submit that the claims are now in condition for allowance and request early notification to that effect.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §1.16, §1.17, and §1.21, which may be required by this paper, or to credit any overpayment, to Deposit Account No. 18-1648, referencing Atty. Docket No. 2302-1631.20.

Please direct all further written communications regarding this application to:

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